



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/060,487	01/30/2002	William J. Kauffman	A148 1640.1	6930

112 7590 11/04/2004

ARMSTRONG WORLD INDUSTRIES, INC.
LEGAL DEPARTMENT
P. O. BOX 3001
LANCASTER, PA 17604-3001

EXAMINER

BISSETT, MELANIE D

ART UNIT PAPER NUMBER

1711

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/060,487

Applicant(s)

KAUFFMAN ET AL.

Examiner

Melanie D. Bissett

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,6,8,9,12-23,26,28-34,36 and 38-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8,9,12-23,26,28-34,36,38-47,49,51 and 53 is/are rejected.
- 7) ☒ Claim(s) 48,50,52 and 54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

1. The rejections of the previous non-final Office action have been altered to reflect the amended claims. The rejections based on 35 USC 112 and claim objections have been withdrawn based on the applicant's amendments.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-2, 5-6, 9, 12-18, and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Mack et al.
4. From a prior Office action:

Mack discloses scratch-resistant thermographic recording films comprising a topcoat having colloidal silica nanoparticles and an organofunctional silane (abstract). The organofunctional silane materials have functional groups such that they are reactive with both the silica and the binder used in the coating (col. 5 lines 38-59). Because the silane materials are reactive with the organic binder and the inorganic particles, it is the examiner's position that the coatings comprise polymerizable inorganic and organic materials. The reference does not indicate that the coupling agents would react with themselves. Since the materials form covalent bonds by condensation reactions, it is the examiner's position that the coatings are curable at least by heat. Substrate materials include PET having a thickness of 2-10 mils (col. 6 lines 25-36). The reference further teaches the use of an adhesion promoter between the coating and the substrate (col. 6 lines 36-37).

Regarding claim 7, it is noted that the reference teaches improved scratch resistance. Thus, the articles have properties useful as flooring wear layers.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al. in view of Hensel et al.

7. From a prior Office action:

Kang discloses a plurality of colloidal inorganic oxide particles in a free-radically curable binder, which provides a [ceramer] coating having improved water repellency, abrasion resistance, and hardness (abstract). The inorganic particles are surface-treated with a silane component (col. 3 lines 52-67). The inorganic particles have particle sizes of 1-200 nm (col. 11 lines 13-18) and are used as a colloidal sol (col. 12 lines 1-15). The surface-treating silane components are silane coupling agents, having a free-radically curable functionality and a hydrolysable silane moiety to react with both the hard particles and with the binder (col. 13 line 25-col. 14 line 10). The preferred coupling agents have acrylic and hydrolysable Si functional groups (col. 14 lines 28-32). A fluoro/silane component is a polymerizable monomer or oligomer (col. 14 line 66-col. 15 line 14) and the inorganic particles are polymerizable monomers, since both are reactive with the curable silane. The reference does not indicate that the coupling agents would react with themselves. The coatings are curable by heat, UV, or electron beam radiation (col. 21 lines 38-53). The coatings of the invention are taught as protective covering coatings (col. 21 lines 21-37), where they are applied to substrates including PET films (examples 3, 10-15). Examples show coating thicknesses within the applicant's claimed range.

Regarding claim 7, it is noted that the reference teaches improved hardness and abrasion resistance. Thus, the articles have properties useful as flooring wear layers.

Kang applies as above, suggesting that coatings be applied to PET substrates and to flooring substrates (example 4) but not suggesting that the composite of PET and the coating should be applied to flooring materials. Hensel teaches floor covering materials, where an inorganic coating is applied to a polyester sheet (abstract). Preferred polyester supports include PET (col. 7 lines 1-13). The laminate formed may be molded to tile or other flooring substrates to form a protective covering (col. 8 lines 1-8). Since Kang is directed to forming protective coverings for a number of applications (col. 21 lines 7-20), it is the examiner's position that it would have been prima facie obvious to use the PET/coating composite in floor covering applications, as Hensel teaches. Motivation would be the formation of moldable floor coverings having improved water repellency, abrasion resistance, and hardness.

Regarding claim 31, note that the claimed gloss retention is not further limited by a method or time period. It is the examiner's position that the coatings of Kang's invention would retain 90% of the original gloss properties for at least a short period of time.

Regarding the claimed light stability color change, it is first noted that the Kang reference reports clear and low-haze coatings (examples). It is the examiner's position that the coatings would remain colorless for at least a short period of time. Also, it is noted that the reference teaches the use of stabilizers, absorbers, and antioxidants to the coating compositions (col. 17

lines 55-63). Thus, it would have been prima facie obvious to use additives to obtain the applicant's claimed light stability to improve the appearance of the coatings.

8. Claims 1, 3, 5-6, 9, 12-23, 26, 28-34, 36, 38, 49, 51, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Kang et al.

9. From a prior Office action:

Ward teaches a flooring material comprising a PET layer, an adhesion promoting layer, and a flooring structure material [0009-0011]. The PET layer is first laminated onto a flooring substrate, and the top flooring structure is then applied to the PET layer [0014]. Flooring products include tile or sheet structures, also including solid foam layers [0024]. Since the PET structure comprises a heat sealable PET layer to aid bonding with a substrate and a primer layer to aid bonding with the top flooring structure, it is the examiner's position that the reference teaches using different adhesive layers on either side of the PET layer [0028]. The flooring structure includes a top clear coat but does not teach the applicant's inorganic/organic top coat [0030]. Kang applies as above, teaching the use of a wear-resistant overlay coating comprising an inorganic sol of colloidal particles, a curable coupling agent, and an organic binder. The coatings are applied to a substrate, dried, and cured. Since both references are concerned with wear resistance of underlying articles, it is the examiner's position that it would have been prima facie obvious to use the top coating of Kang's invention in the flooring applications of Ward's invention to further improve abrasion resistance, water repellency, and hardness of the flooring articles.

Regarding claim 31, note that the claimed gloss retention is not further limited by a method or time period. It is the examiner's position that the coatings of Kang's invention would retain 90% of the original gloss properties for at least a short period of time.

Regarding the claimed light stability color change, it is first noted that the Kang reference reports clear and low-haze coatings (examples). It is the examiner's position that the coatings would remain colorless for at least a short period of time. Also, it is noted that the reference teaches the use of stabilizers, absorbers, and antioxidants to the coating compositions (col. 17 lines 55-63). Thus, it would have been prima facie obvious to use additives to obtain the applicant's claimed light stability to improve the appearance of the coatings.

10. Regarding claims 34 and 36, Ward teaches applying adhesion and primer layers to the PET film before application to the substrate [0026].

Art Unit: 1711

11. Claims 29 and 30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mack et al.

12. From a prior Office action:

It is the examiner's position that, because the reference discloses all the limitations of the claims except the glass transition and hardness properties of the top coating, the examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render the claimed invention obvious. Therefore, it is appropriate for the examiner to make a rejection under both the applicable section of 35 USC 102 and 35 USC 103 such that the burden is placed upon the applicant to provide clear evidence that the respective compositions do in fact differ. *In re Fitzgerald et al.*, 205 USPQ 594.

In this case, the coupling agents and hard particle materials are similar to those employed by the applicants. Thus, the glass transition and hardness properties may be inherent to the coatings used in the reference. However, the glass transition temperature range claimed is above about room temperature. It would have been obvious to choose a coating having a T_g above room temperature to form a tack-free coating before cure to minimize defects. Also, coatings with the claimed hardness value would have improved scratch resistance. Thus, it would have been obvious to choose a coating having the claimed hardness values to improve scratch resistance.

13. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ward et al. in view of Kang et al. as applied to claims 1, 3-7, and 9-38 above, and further in view of Laurence et al.

14. From a prior Office action:

Ward and Kang apply as above, suggesting a method of applying a top coat to a PET layer-containing flooring substrate and curing the top coat but failing to mention the use of a PET copolymer. Laurence teaches that PETG copolymers have improved adhesion to materials including PVC without the use of an adhesion promoter [0033]. Because the base layer of the flooring structure of Ward's invention is PVC, it is the examiner's position that it would have been prima facie obvious to use PETG in place of the PET layer in Ward's invention to alleviate the need for an adhesion promoting layer.

15. Claims 1-3, 5-6, 8-9, 12-21, 26, 28-32, 40-47, 49, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laurence et al. in view of Kang et al.

Art Unit: 1711

16. From a prior Office action:

Laurence discloses a decorative top layer assembly for flooring applications, where an overlay layer with enhanced wear resistant qualities is applied to a decorative layer and a PETG layer (abstract). The PETG layer is applied to flooring substrates, including tile and wood planks [0018]. Adhesive layers may be used on either side of the PETG layer, where different adhesives may be used to accommodate different substrates [0059]. The overlay material contains a resin binder and inorganic particles, providing an organic/inorganic top coat layer (examples). The decorative layers are bonded together and then applied to the flooring substrate.

Laurence applies as above, failing to teach the claimed curable overlay material comprising coupling agents, nanoparticles, and inorganic sol. Kang applies as above, teaching the use of a wear-resistant overlay coating comprising an inorganic sol of colloidal particles, a curable coupling agent, and an organic binder. The coatings are applied to a substrate, dried, and cured. Since both references are concerned with wear resistance and moisture repellency of underlying articles, it is the examiner's position that it would have been prima facie obvious to use the top coating of Kang's invention in the flooring applications of Laurence's invention to further improve abrasion resistance, water repellency, and hardness of the flooring articles.

Regarding the thickness of the PETG substrate, Laurence teaches that various materials and thicknesses are useful in the invention [0044]. Thus, it is the examiner's position that it would have been prima facie obvious to use a PETG sheet of any conventional thickness with the expectancy of forming a flooring structure with equally improved durability, moisture resistance, and dimensional stability.

Regarding claim 31, note that the claimed gloss retention is not further limited by a method or time period. It is the examiner's position that the coatings of Kang's invention would retain 90% of the original gloss properties for at least a short period of time.

Regarding the claimed light stability color change, it is first noted that the Kang reference reports clear and low-haze coatings (examples). It is the examiner's position that the coatings would remain colorless for at least a short period of time. Also, it is noted that the reference teaches the use of stabilizers, absorbers, and antioxidants to the coating compositions (col. 17 lines 55-63). Thus, it would have been prima facie obvious to use additives to obtain the applicant's claimed light stability to improve the appearance of the coatings.

Allowable Subject Matter

17. Claims 48, 50, 52, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 1711

18. The following is a statement of reasons for the indication of allowable subject matter:

19. The closest prior art, Mack et al. and Kang et al., disclose coating compositions comprising coupling agents, inorganic polymerizable agents, and organic polymerizable binders. However, the references do not teach a polymerizable tetraalkylsiloxane as a component in the invention. It is the examiner's position that the use of such a material in the disclosed composites and methods would provide a novel and unobvious step over the prior art.

Response to Arguments

20. In response to the applicant's arguments that the Mack reference does not teach a wear layer composite and that the support substrate would not provide a wear layer, it is noted that the PET layer in each instance would possess the same properties and be capable of function as a wear layer. The examiner sees no structural differences in the claimed invention and the reference's teachings; thus, it is the examiner's position that the composite structure of Mack's invention would anticipate the claimed wear layer structure.

21. Regarding the applicant's arguments that an adhesive would not be encompassed in "adhesion promoter", it is noted that the examiner must read the claims by their broadest interpretation. The applicant has not defined "adhesion promoter" in the specification to exclude certain adhesives. Adhesives would certainly function to

promote adhesion between two materials; thus, "adhesion promoter" should be read to encompass such adhesives.

22. In response to the applicant's arguments that the combination of Ward and Kang would not result in the claimed invention since a PVC plastisol layer is present and is opaque, it is noted that the claims do not limit the wear layer to a transparent or translucent material. It is the examiner's position that the clarity of a material would not prevent it from exhibiting wear properties. Furthermore, the PET layer would possess wear properties itself regardless of intermediate layers present.

23. Regarding the applicant's arguments that none of the references teach an inorganic polymerizable monomer, it is noted that the Kang and Ward references teach coating compositions comprising a coupling agent which is reactive with both an inorganic particulate and an organic binder. The inorganic particles have multiple reactive sites and thus would be polymerizable.

24. Regarding the applicant's arguments that one of ordinary skill in the art would know how to measure gloss retention, it is the examiner's position that gloss retention could be measured by a number of methods and using any time period. The current claims broadly claim a gloss retention but are not limited to a method or time period. The examiner maintains the position that the coatings of the reference would retain gloss for at least a short period of time.

25. In response to the applicant's arguments that the substitution of Kang's composite for the composite of Hensel's invention would destroy the reference, it is noted that Hensel has been used as a secondary reference to show the conventionality

Art Unit: 1711

of applying a wear layer composite to provide protective covering for flooring substrates.

Kang notes the use of the coatings with flooring substrates but does not show the composite on a flooring substrate. The use of a composite on a flooring substrate by Hensel's teaching would not destroy the Kang reference.

26. Regarding the applicant's arguments that neither Kang nor Laurence suggest a composite wear layer, it is again noted that Laurence teaches a composite of a topcoating, a decorative layer, and a PETG layer. The PETG film would inherently function as a wear layer, and the composite would function as a wear layer composite by the specific teachings of Laurence.

Conclusion

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1711

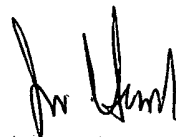
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie D. Bissett whose telephone number is (571) 272-1068. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mdb



James J. Seidleck
Supervisory Patent Examiner
Technology Center 1700